BS EN ISO 20346:2022+A1:2024

BSI Standards Publication

Personal protective equipment — Protective footwear

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Full document details: BS EN ISO 20346:2022+A1:2024

National foreword

This British Standard is the UK implementation of EN ISO 20346:2022+A1:2024. It is identical to ISO 20346:2021, incorporating amendment 1:2024. It supersedes BS EN ISO 20346:2022, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee PH/1, Safety, protective and occupational footwear.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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UK Government is responsible for legislation. For information on legislation and policies relating to that legislation, consult the relevant pages of www.gov.uk.

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Équipement de protection individuelle - Chaussures de protection (ISO 20346:2021)

Persönliche Schutzausrüstung - Schutzschuhe (ISO 20346:2021)

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European foreword

This document (EN ISO 20346:2022) has been prepared by Technical Committee ISO/TC 94 "Personal safety -- Personal protective equipment" in collaboration with Technical Committee CEN/TC 161 “Foot and leg protectors” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by March 2023.

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This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

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Endorsement notice

The text of ISO 20346:2021 has been approved by CEN as EN ISO 20346:2022 without any modification.

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European foreword to Amendment 1

This document (EN ISO 20346:2022/A1:2024) has been prepared by Technical Committee ISO/TC 94 "Personal safety -- Personal protective equipment" in collaboration with Technical Committee CEN/TC 161 “Foot and leg protectors” the secretariat of which is held by BSI.

This Amendment to the European Standard EN ISO 20346:2022 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2024, and conflicting national standards shall be withdrawn at the latest by August 2024.

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Annex ZA
(informative)

Relationship between this European Standard and the essential requirements of PPE Regulation (EU) 2016/425 aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/571 to provide one voluntary means of conforming to essential requirements of REGULATION (EU) 2016/425 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC.

Once this standard is cited in the Official Journal of the European Union under that REGULATION (EU) 2016/425, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Regulation, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex II of REGULATION (EU) 2016/425

ESSENTIAL HEALTH AND SAFETY REQUIREMENTS of REGULATION (EU) 2016/425		Clause(s)/sub-clause(s) of this EN ISO	Remarks/Notes
General requirements applicable to all PPE			
1.1.1	Ergonomics	5.3.4	
1.1.2.1	Optimum level of protection	5.3.4	
1.2.1	Absence of inherent risks and other nuisance factors	5.3.4	
1.2.1.1	Suitable constituent materials	5.3.6,	
1.2.1.2	Satisfactory surface condition of all PPE parts in contact with the user	5.3.4	
1.2.1.3	Maximum permissible user impediment	5.3.4	
1.3.1	Adaptation of PPE to user morphology	5.3.4	
1.3.2	Lightness and strength	5.3.1.2, 5.4.3, 5.4.4, 5.4.5, 5.5.2, 5.6.2, 5.8.3, 5.8.4, 5.8.6, 6.2.7, 6.2.8	
1.4	Manufacturer's instructions and information	Clause 8	
2.2	PPE enclosing the parts of the body to be protected	5.4.6, 5.5.4, 5.7.3	
2.4	PPE subject to ageing	Clause 7 and Clause 8	
2.6	PPE for use in potentially explosive atmospheres	6.2.2.1; 6.2.2.2	

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2.12	PPE bearing one or more identification markings or indicators directly or indirectly relating to health and safety	6.1 Table 16, Clause 7	
2.14	Multi-risk PPE	5.3.5, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.2.6, 6.2.7, 6.2.8, 6.2.10, 6.4.1, 6.4.2	
3.1.1	Impact caused by falling or ejected objects and collisions of parts of the body with an obstacle	5.3.2.6, 6.2.6, 6.2.7	
3.1.2.1	Prevention of falls due to slipping	5.3.5, 5.8.2, 6.4.3, 6.2.10,	
3.2	Protection against static compression of part of the body	5.3.2.7, 6.2.4	
3.3	Protection against mechanical injuries	5.5.2, 5.8.3, 6.2.1, 6.2.8, 6.2.9	
3.6	Protection against heat and/or fire	6.2.3.1; 6.4.1	
3.7	Protection against cold	6.2.3.2	

WARNING 1 — Presumption of conformity stays valid only, as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

ISO 20346 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 161, *Foot and leg protectors*, in collaboration with ISO Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 3, *Foot protection*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 20346:2014), which has been technically revised. The main changes compared to the previous edition are as follows:

— revision of the terms and definitions Clause 3;

— Figures 1 to Figure 4 revised;

— Tables 1, 2 and 3 revised;

— heel area defined (5.2.3);

— toe protection, depending on ISO 22568 - 1 and ISO 22568 -2, exchanging EN 12568:2010;

— requirement on slip resistance revised (5.3.5 and 6.2.10); marking “SRA”, “SRB” and “SRC” deleted; marking “SR” and “Ø” introduced;

— pH value and chromium VI tests added in 5.3.6; former separate clauses under upper, lining, tongue and insole/insock deleted;

— requirement for seam strength of hybrid footwear added (5.3.7);

— requirement for upper materials not fulfilling WVP explained (5.4.6);

— abrasion of insoles revised (5.7.4);

— outsole requirements revised (5.8);

— outsole thickness revised (5.8.2.1);

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— flexing resistance of outsole clarified (5.8.5);

— perforation resistant insert, depending on ISO 22568-3 and ISO 22568-4, exchanging EN 12568:2010;

— tolerance added (6.2.3.1);

— former Annex A Hybrid Footwear included in the general text (Table 2, 5.4.1.2);

— optional requirement of metatarsal protection revised (6.2.6);

— optional requirement on ankle protection clarified (6.2.7);

— optional requirement for "SC" scuff caps added (6.2.9);

— water penetration and absorption, symbol "WRU" deleted, symbol "WPA" introduced;

— optional requirement for "LG" Ladder grip of outsoles added (6.4.3);

— marking revised (Table 16 and Table 20);

— two new categories added, P6 and P7 (Table 20);

— information on obsolescence date added (8.5);

— Annex A with requirements for customized protective footwear added;

— Annex B assessment of the footwear by the wearer added;

— Annex C Slip resistance added;

— requirement for electrically insulating footwear (EN 50321) deleted.

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Personal protective equipment — Protective footwear

1 Scope

This document specifies basic and additional (optional) requirements for protective footwear used for general purpose. It includes, for example, mechanical risks, slip resistance, thermal risks, ergonomic behaviour. It includes, for example, mechanical risks, slip resistance, thermal risks, ergonomic behaviour. It also specifies requirements for protective footwear equipped with customized insocks, customized protective footwear or individual manufactured customized protective footwear. This standard does not cover the property of high visibility because of interaction with the clothing (e.g. trousers cover the footwear) and work area conditions (e.g. dirt, mud).

Special risks are covered by complementary job-related standards (e.g. footwear for firefighters, electrical insulating footwear, protection against chain saw injuries, protection against chemicals and molten metal splash, protection for motorcycle riders).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

The following referenced documents are indispensable for the application of this document.

〉A1〈 ISO 20344:2021+Amd.1:2024 〉A1〈, *Personal protective equipment — Test methods for footwear*

ISO 22568-1:2019, *Foot and leg protectors — Requirements and test methods for footwear components — Part 1: Metallic toecaps*

ISO 22568-2:2019, *Foot and leg protectors — Requirements and test methods for footwear component — Part 2: Non-metallic toecaps*

EN 13832-3:2018, 〉A1〈 *Footwear protecting against chemicals — Part 3: Requirements for prolonged contact with chemicals* 〉A1〈

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

Note 1 to entry The component parts of footwear are illustrated in Figure 1, 2 and 3.

Note 2 to entry Further terms and definitions can be found in ISO 19952[1].

3.1
protective footwear
footwear incorporating protective features to protect the wearer from injuries that could arise through accidents

Note 1 to entry: Items of protective footwear are fitted with toecaps designed to give protection against impact of at least 100 J and against compression of at least 10 kN.

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3.2
upper
part or parts of a shoe that cover the toes, the top of the foot, the sides of the foot, and the back of the heel; it is attached to the outsole of a footwear.

3.3
leather
hide or skin tanned to be imperishable

3.3.1
leather split
flesh or middle part of a hide or skin, obtained by splitting a thick *leather* (3.3) which is tanned to be imperishable

3.4
rubber
type of elastic *polymeric material* (3.5) which can be vulcanized

3.5
polymeric material
large molecules composed of repeating structural units (monomers) typically connected by chemical bond

EXAMPLE Polyurethane (PU) or polyvinylchloride (PVC).

3.6
insole
non-removable component used to form the base of the shoe to which the *upper* (3.2) is usually attached during lasting

3.7
insock
removable or non-removable footwear component used to cover completely the *insole* (3.6)

3.7.1
seat sock
removable or non-removable footwear component used to cover the *insole* (3.6) in the heel area

3.7.2
footbed
insock (3.7) designed according to the sole of the foot with or without the aim of correcting the posture

Note 1 to entry: “Non-removable” means that the component cannot be removed without any damage.

Note 2 to entry: “Removable” means that the component can be removed, but the protective features are only maintained when it is placed into the footwear.

3.8
lining
material covering the inner surface of the footwear

Note 1 to entry: The wearer’s foot is in direct contact with the lining.

Note 2 to entry: Where an upper is split at the forepart to house the toecap, or if an external piece of material is stitched to the upper to form a pocket to house the toecap, the material under the toecap acts as a lining.

3.9
cleat
protruding part of the outer surface of the outsole

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3.10
outsole
outermost part to provide footwear with the necessary traction and protection from the floor surfaces it will be in contact with

3.10.1
rigid outsole
outsole, which can be bent less than an angle of 45° under a load of 30 N

Note 1 to entry: According to A1 ISO 20344:2021+Amd.1:2024 A1; 8.5.

3.10.2
multi-layer outsole
made up of two or more material layers completely covering the entire surface; a tread cover of less than 0,5 mm is not considered a layer

3.11
perforation resistant insert
component, placed in the outsole complex or used as an *insole* (3.6) simultaneously in order to provide protection against perforation

3.12
protective toecap
built-in footwear component designed to protect the toes of the wearer from impacts and compression

3.13
scuff caps
abrasion resistant materials or component to protect against scuff of the upper external toe region during kneeling activities

3.14
heel area
counter (stiffener) area, rear part of the footwear

3.15
partially conductive footwear
footwear with low electrical resistance between the wearer and the ground, able to dissipate some static electricity

3.16
antistatic footwear
footwear maintaining some electrical resistance between the wearer and the ground, able to dissipate some static electricity

3.17
fuel oil
aliphatic hydrocarbon constituent of petroleum

3.18
customized protective footwear
covering all individual customized footwear and other specific conditions of a foot.

Note 1 to entry: They integrate in their design the recipient's own physiognomy and the specific arrangements aimed at modifying, correcting, compensating, curing, preventing, relieving a pathology, e.g. overweight, diabetes, hyperhidrosis, misalignments etc. …

Note 2 to entry: Several types of customized protective footwear and footwear adaptions exist:

Type 1 — equipped with customized insocks

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Protective footwear (according to this document) incorporating customized insocks adapted to the wearers needs.

Type 2 — modified protective footwear

protective footwear (according to this document) modified from its original construction to fit to an individual user.

See examples in ISO 21064:2017, 6.4[3]

Type 3 — Bespoke protective footwear

Protective footwear (according to this document) constructed as a single unit to fit an individual user.

See examples in ISO 21064:2017, 6.3.2 and 6.3.3[3]

Note 3 to entry: Adapted to fit an individual user or a single unit to fit an individual user.

Note 4 to entry: According to ISO 21064:2017, 3.2.[3]

3.19
hybrid footwear
footwear that cannot be classified as footwear of class I or II

Note 1 to entry: There are two types of hybrid footwear (other than design E boots) see 3.19.1 and 3.19.2.

3.19.1
hybrid "moulded" footwear
vulcanized rubber or all moulded polymeric foot section integrally moulded around the toecap and often including the outsole, which can be unlined and usually does not incorporate an *insole* (3.6).

3.19.2
hybrid "mounted" footwear
vulcanized rubber or all moulded polymeric foot section that is manufactured separately and then constructed around a conventionally lasted *lining* (3.8)/*insole* (3.6) construction and often with a separately attached *outsole* (3.10).

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